

## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:29 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (017092234) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Thursday, April 17, 2014 8:23 AM  
To: ADMComments  
Subject: (017092234) ADM Carbon Sequestration Public Comments

2-Name

Matthew L Ledvina

3-Organization

Gestalt Engineering

4-E-mail

Ex. 6 [REDACTED]

5-Street

Ex. 6 [REDACTED]

6-City

Ex. 6 [REDACTED]

7-State

MN

8-Zipcode

Ex. 6 [REDACTED]

9-Comments

The stated goal of the project is "to demonstrate the ability of the Mt. Simon geologic formation to accept and retain industrial scale volumes of CO2 for permanent geologic sequestration". Is this in anticipation of ADM being regulated in the production of green house gases? There should be transparency here.

Overall, I support this project in utilizing techniques for reducing atmospheric emissions of green house gases.

Matthew L. Ledvina, P.E., CHMM

Gestalt Engineering, LLC

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Send Comments

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Safari/537.36

Referred: <http://www.epa.gov/region5/water/uic/adm/pubcomment.html>

TSSMS: region05

Mail to File: adm.txt  
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## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:29 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (017103813) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Thursday, April 17, 2014 9:38 AM  
To: ADMComments  
Subject: (017103813) ADM Carbon Sequestration Public Comments

2-Name

Gary Overby

3-Organization

Mr.

4-E-mail

Ex. 6 [REDACTED]

5-Street

Ex. 6 [REDACTED]

6-City

Ex. 6 [REDACTED]

7-State

WI

8-Zipcode

Ex. 6 [REDACTED]

9-Comments

I don't support the EXPERIMENT of carbon sequestration as an answer to pollution. I believe we can answer the problem by conserving, using green energy, and growing our LOCAL power. Ethanol is NOT anything more than a temporary bridge to the goal of renewable energy SECURITY. Stop the subsidies for energy DINOSAURS.

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Safari/537.36  
Referred: <http://www.epa.gov/region5/water/uic/adm/pubcomment.html>  
TSSMS: region05  
Mail to File: adm.txt

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## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:29 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (017175520) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Thursday, April 17, 2014 4:55 PM  
To: ADMComments  
Subject: (017175520) ADM Carbon Sequestration Public Comments

2-Name

Anthony Samsel

3-Organization

Scientist / Consultant

4-E-mail

Ex. 6 [REDACTED]

5-Street

Ex. 6 [REDACTED]

6-City

Ex. 6 [REDACTED]

7-State

NH

8-Zipcode

Ex. 6 [REDACTED]

9-Comments

Underground sequestration of CO2 is a bad idea. Someone didn't think this through. This technology will inadvertently cause aquifer contamination, which will lower the acidity of the water and cause massive mineral leaching, similar to techniques used in uranium fluid extraction mining operations.

Expect increases in radionuclide contamination of the aquifer by Uranium, thorium, radium and radon among other elemental contaminants.

This also presents the potential for a disaster with mass casualties in the event of an earthquake which could disrupt and release volumes of stored CO2. This would kill both human and animal populations in the vicinity of the release.

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Safari/537.75.14

Referred: <http://www.epa.gov/region5/water/uic/adm/pubcomment.html>

TSSMS: region05

Mail to File: adm.txt  
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## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:29 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (021084634) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Monday, April 21, 2014 7:47 AM  
To: ADMComments  
Subject: (021084634) ADM Carbon Sequestration Public Comments

2-Name

Michael W, Muczynski

3-Organization

(personal opinon)

4-E-mail

mmuczynski@kikcorp.com

5-Street

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6-City

Ex. 6 [REDACTED]

7-State

IL

8-Zipcode

Ex. 6 [REDACTED]

9-Comments

Voting in favor of permitting ADM to proceed with CO2 injection wells. Science and technology needs to try new things, and learn from them and improve "next time".

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Referred: <http://www.epa.gov/region5/water/uic/adm/pubcomment.html>

TSSMS: region05  
Mail to File: adm.txt

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## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:29 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (006063546) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Tuesday, May 06, 2014 5:36 AM  
To: ADMComments  
Subject: (006063546) ADM Carbon Sequestration Public Comments

2-Name  
Jeffrey Sprague  
3-Organization

4-E-mail

Ex. 6 [REDACTED]  
5-Street

Ex. 6 [REDACTED]  
6-City

Ex. 6 [REDACTED]  
7-State  
IL

8-Zipcode

Ex. 6 [REDACTED]  
9-Comments

Please type your comments here

Dear Mr. Batka,

Please regard this request as an initial "comment" on the ADM Carbon Sequestration Draft Permit for the proposed CCS #2 Well in Macon County, Illinois. Specifically, I'm requesting a 45 day extension of the comment period to allow USEPA time to make available the full administrative record of the proposed permitting action and to give the local citizenry the necessary time and opportunity to review and respond to that record. USEPA Region 5 has indicated that the current draft permit and fact sheet are available at the Decatur Public Library (Decatur, Illinois), and it would seem reasonable for the remaining documentation in the record to be made available at this repository as well. It is certainly unreasonable to expect that Macon County citizens should have to travel to USEPA's Region 5 office in Chicago in order to view the complete administrative record. I have personally made a FOIA request (Tracking Number EPA-R5-2014-006074) to obtain this information, but the estimated completion and delivery date by USEPA would leave essentially no time for review and comment within the current comment period. Your consideration of a 45 day extension to the comment period is greatly appreciated.

Jeffrey Sprague

Ex. 6 [REDACTED]  
[REDACTED], Illinois [REDACTED]

Ex. 6 [REDACTED]  
[REDACTED]

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Referred: <http://www.epa.gov/Region5/water/uic/adm/pubcomment.html>

TSSMS: region05

Mail to File: adm.txt

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## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:28 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: Comments of the Carbon Sequestration Council on Draft Permit Number IL-115-6A-0001 for the Well CCS #2 in Decatur, Illinois  
**Attachments:** CSC Comments on Draft ADM permits - May 30 2014.pdf; CSC Detailed Comments on Draft Class VI Permit for ADM Well CCS #2.pdf

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**From:** Van Voorhees, Robert [mailto:rfvanvoorhees@bryancave.com]  
**Sent:** Friday, May 30, 2014 1:12 PM  
**To:** ADMComments  
**Cc:** McDonald, Jeffrey  
**Subject:** Comments of the Carbon Sequestration Council on Draft Permit Number IL-115-6A-0001 for the Well CCS #2 in Decatur, Illinois

The Carbon Sequestration Council (CSC) is pleased to submit these comments on the Draft Permit Number: IL-115-6A-0001 for the Archer Daniels Midland Company (ADM) Well CCS #2 in Decatur, Illinois, issued by EPA on April 15, 2014.

Best Regards,  
Bob Van Voorhees  
Robert F. Van Voorhees, Executive Director  
Carbon Sequestration Council  
1155 F Street, N.W.  
Washington, D.C. 20004  
Phone: 202.508.6014  
Fax: 202.220.7314  
[bobvanvoorhees@carbonsequestrationcouncil.org](mailto:bobvanvoorhees@carbonsequestrationcouncil.org)



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bcllp2014



## Carbon Sequestration Council

1155 F Street, N.W.  
Suite 700  
Washington, DC 20004-1312

May 30, 2014

Jeffrey McDonald  
U.S. EPA Region 5  
UIC Branch (WU-16J)  
77 W. Jackson Blvd.  
Chicago, IL 60604-3590

Re: U.S. Environmental Protection Agency (EPA) Draft Permit Number IL-115-6A-0001 for the Well CCS #2 in Decatur, Illinois

Dear Mr. McDonald:

The Carbon Sequestration Council (CSC) is pleased to submit these comments on the Draft Permit Number: IL-115-6A-0001 for the Archer Daniels Midland Company (ADM) Well CCS #2 in Decatur, Illinois, issued by EPA on April 15, 2014. CSC is a multi-industry association formed to provide a forum for inter-industry communication around key issues of carbon capture and sequestration (CCS) including policy, funding, and messaging. The CSC facilitates information sharing and consensus building to more effectively promote policies, legislation and regulatory frameworks that foster the use of anthropogenic CO<sub>2</sub> for enhanced oil recovery (EOR) as well as the early use and commercial deployment of geologic sequestration (GS) as a means of addressing greenhouse gas mitigation.

We commend EPA on the issuance of this draft permit and the draft permits for the FutureGen Project for public comment and on the work that has been undertaken to process these first of a kind permit drafts. The CSC has followed closely the development of the regulatory framework for the Class VI underground injection control (UIC) program and has provided extensive comments on the proposed rule first published by EPA on July 25, 2008 (73 FR 43492) and on other related parts of the regulatory framework, including the draft guidance documents that EPA has published for the Class VI UIC program. As officials of the EPA UIC program in Washington and in the EPA regions have emphasized on a number of occasions, this is the first time through the UIC Class VI permitting process, and it is a learning process for everyone involved and for everyone who may become involved as the program continues. We join EPA in wanting to make sure that this process continues on the proper pathway and that permits are appropriate and consistent with the flexible and adaptable Class VI regulatory framework promulgated by EPA.

Our interest, and our reason for commenting on this draft permit, is directed at the potential precedents being established for these draft permits and all future Class VI permits that

may be issued by EPA Region 5, other EPA regions and state primacy programs. We want to make sure that the permits, the conditions contained therein, and the plans approved as part of permits are consistent with the regulatory requirements and designed to assist with full understanding of the requirements and safeguards of Class VI permits. Our comments are designed to improve the clarity and accuracy of these Class VI permits.

To begin, we commend EPA for the very important and fundamental recognition in Section A of the draft permit that “[f]or purposes of enforcement, compliance with this permit during its term constitutes compliance with Part C of the Safe Drinking Water Act (SDWA)”. This is a fundamental tenant of virtually every EPA permitting program. Permit applicants are called upon to submit their plans and proposals for complying with the regulatory permit requirements that have been promulgated by EPA based on the underlying legislative mandates enacted by the U.S. Congress to achieve specific statutory objectives. In this case, the permit applications provide for compliance with the UIC program requirements promulgated by EPA pursuant to the Safe Drinking Water Act (SDWA) to protect underground sources of drinking water (USDWs) from endangerment consistent with the mandate of that statute. As EPA has recognized in numerous provisions of the draft permit, the approved application, the required plans, and the individualized permit conditions provide for compliance with the promulgated regulatory requirements of the Class VI UIC program. That is why compliance with the final permit “constitutes compliance with Part C of the SDWA”.

For example, Section M(3) of the draft permit states: “This monitoring shall be performed as described in the Testing and Monitoring Plan to meet the requirements of 40 CFR 146.90(b).” This is an excellent recognition of the process whereby, the applicant has submitted a Testing and Monitoring Plan that provides for satisfying the requirements of the UIC Class VI regulations in section 40 CFR 146.90(b) and EPA has approved the plan and the permit because it meets those requirements. Accordingly, compliance with the Testing and monitoring Plan of this permit during its term will constitute compliance with the section 146.90(b) requirements as noted by the permit condition in sections M(3) of the draft permits.

Unfortunately, other conditions in the draft permit that also reference regulatory provisions are too loosely worded and give the inappropriate impression that the permittee must take some further steps—beyond complying with the permit and the approved incorporated plans—to meet the regulatory requirements. For example, Section G(1) of the draft permits states: “The permittee shall maintain and comply with the approved Area of Review and Corrective Action Plan (Attachment B of this permit) which is an enforceable condition of this permit **and shall meet the requirements of 40 CFR 146.84.**” This wording is inappropriate because maintaining and complying with “the approved Area of Review and Corrective Action Plan (Attachment B of this permit) which is an enforceable condition of this permit” will be entirely sufficient to meet the requirements of 40 CFR 146.84. EPA makes that determination when it issues the permit and approves the plan as part of that permit. No further action is necessary; therefore the inclusion of the words “and shall meet the requirements of 40 CFR 146.84” is both unnecessary and inappropriately confusing. It would be acceptable to use

wording similar to that in Section M(3) and say “to meet” rather than “and shall meet”, but given the reference to the plan being an enforceable condition of the permit, that is unnecessary and may potentially be confusing. There are a number of other places in the draft permits where loose—and potentially contradictory language (that is, language that would contradict section A)—is used. The attached detailed comments identify these provisions and provide specific recommendations of alternative language.

The problem identified with the potential conflict created by referencing both permit conditions and regulatory provisions is exacerbated by the frequent repetition of regulatory requirements throughout the draft permits. This is an unusual departure from past approaches in UIC permits. For example, Class IH permits issued by EPA Region 5 have included conditions for post-closure plans that say:

“The permittee has submitted a plan for post-closure maintenance and monitoring, which is included in Part III(B) of this permit. This plan includes the information required by Section 146.72(a) and demonstrates how each of the applicable requirements of Section 146.72(a) will be met. The obligation to implement the post-closure plan survives the termination of this permit or the cessation of injection activities.”

This excellent language provides a very straightforward explanation of how the submitted plan, which has been reviewed and approved by EPA, provides for compliance with the regulatory requirements and becomes an enforceable part of the permit. A similar approach could easily be used for each of the required plans included in the Class VI permits and would provide a clearer understanding of how the plans function in providing for compliance with the regulatory requirements as part of the Class VI permit.

Section J(1)(d) of the draft permits appears to require that “tests” be conducted to determine “fracture pressure and the physical and chemical characteristics of the injection and confining zones”. Yet, the applicable provision of section 146.87(d) only requires that “the owner or operator must determine or calculate” these items. As we understand the situation, in the case of this particular permit, testing has already been conducted in well CCS #1 that should be sufficient. Accordingly, further testing should be completely optional if sufficient information is already available. Our attached detailed comments provide alternative language to achieve this result.

Section K(1) of the draft permits inappropriately recites the regulatory requirements for determining the maximum injection pressure as if those requirements constitute additional permit conditions and, only after doing so, then states that “[t]he maximum injection pressure limit is listed in Attachment A”. Referring to Attachment A confirms that the stated maximum injection pressure has been approved as properly calculated in accordance with the regulatory provisions. It can only be confusing to state this permit condition as if it constitutes a number of different

requirements that must also be met. Compliance with the maximum injection pressures in Attachment A constitutes compliance with the regulatory requirement, which does not need to be restated in the condition in addition to being fully stated and explained in Attachment A.

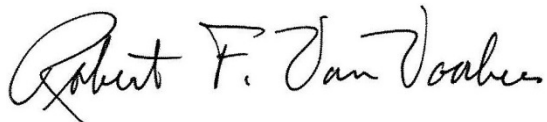
Section K(8) of the draft permits incorrectly states that injection must cease if “[t]he automatic alarm or automatic shut-off system is triggered” or if “[a] significant unexpected change in the annulus or injection pressure” occurs. Cessation of injection is required in such circumstances only if, “upon investigation, the well appears to be lacking mechanical integrity” after the event occurs. Our detailed comments provide an appropriate revision to make this condition consistent with the regulatory requirements of sections 146.88(f) and 146.94(b).

Section O(6)(b)(v) incorrectly states that “[t]he permittee shall continue to conduct post-injection site monitoring for at least 50 years or for the duration of any alternative timeframe approved pursuant to 40 CFR 146.93(c) and the Post-Injection Site Care and Site Closure Plan.” The permittee may discontinue post-injection site monitoring earlier than either of those dates if, pursuant to section 146.93(b)(2) the Director “authorize[s] site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe”. A permittee is never subject to an absolute requirement to continue monitoring for at least 50 years, and the permit should not suggest otherwise. Given the potential alternative scenarios for discontinuation of monitoring, it would be more accurate to simply state: “The permittee shall continue to conduct post-injection site monitoring until the Director has authorized site closure.”

Thank you for the opportunity to submit these comments on the Draft Class VI permits. In doing so, we are very cognizant that this is an important learning process for everyone involved, and we want to advance that process by ensuring the quality of the initial permits issued under the UIC Class VI program. If you have any questions or need any additional information about these comments, please contact me at [REDACTED] or at 202-508-6014.

Ex. 6

Respectfully submitted,



Robert F. Van Voorhees  
Executive Director

cc: [ADMComments@epa.gov](mailto:ADMComments@epa.gov)

| Provision | Text of Draft Permit   | References  | Proposed Revision   | Comment   |
|-----------|--|---|---|---|
| A         | For purposes of enforcement, compliance with this permit during its term constitutes compliance with Part C of the Safe Drinking Water Act (SDWA).   |   |   | We commend EPA for including this very important and fundamental provision. This is a fundamental tenant of virtually every EPA permitting program. Unfortunately, some of the language in other conditions appears inconsistent with this provision.   |
| G(1)      | The permittee shall maintain and comply with the approved Area of Review and Corrective Action Plan (Attachment B of this permit) which is an enforceable condition of this permit and shall meet the requirements of 40 CFR 146.84.   |   | <p>The permittee shall maintain and comply with the approved Area of Review and Corrective Action Plan (Attachment B of this permit) which is an enforceable condition of this permit. <del>and shall</del> meets the requirements of 40 CFR 146.84.</p> <p>--OR--</p> <p>The permittee has submitted an Area of Review and Corrective Action Plan, which is included in Attachment B of this permit. This plan includes the information required by Section 146.84 and demonstrates how each of the applicable requirements of Section 146.84 will be met.</p> | Complying with the approved Area of Review and Corrective Action Plan does ipso facto meet the requirements of 40 CFR 146.84. There is not a requirement to comply with the approved plan and –in addition—comply with some other interpretation of the requirements of 146.84. By issuing this permit, EPA has determined that compliance with the Area of Review and Corrective Action Plan during the term of the permit constitutes compliance with 146.84. |
| G(2)      | 2. At the fixed frequency specified in the Area of Review and Corrective Action Plan, or more frequently when monitoring and operational conditions warrant, the permittee must reevaluate the area of review and perform corrective action in the manner specified in 40 CFR 146.84 and update the Area of Review and Corrective Action Plan or demonstrate to the Director that no update is needed. | <p>146.84(b) The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:</p> <p>* * * *</p> <p>(2) A description of:</p> <p>(i) The minimum fixed frequency, not to exceed five years, at which the owneror operator proposes to reevaluate the area of review;</p> <p>(ii) The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency</p> | <p>2. At the fixed frequency specified in the <u>approved</u> Area of Review and Corrective Action Plan (<u>Attachment B of this permit</u>), or more frequently when monitoring and operational conditions warrant <u>as described in that plan</u>, the permittee must reevaluate the area of review and perform corrective action in the manner specified in 40 CFR 146.84 and update the Area of Review and Corrective Action Plan or demonstrate to the Director that no update is needed.</p>   | The plan itself is intended to spell out the frequency of review and the conditions that will trigger an earlier review. It is better to specify the fixed frequency or to use the same formula of “approved Area of Review and Corrective Action Plan (Attachment B of this permit)”.  |

| Provision | Text of Draft Permit   | References   | Proposed Revision   | Comment  |
|-----------|--|--|---|--|
|           |  | established in paragraph (b)(2)(i) of this section.  |   |  |
| G(3)      | 3. Following each AoR reevaluation or a demonstration that no evaluation is needed, the permittee shall submit the resultant information in an electronic format to the Director for review and approval of the AoR results.   | 146.84(e)(4) Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§ 144.39 or 144.41 of this chapter, as appropriate. | G.3. Following each AoR reevaluation <del>or a demonstration that no evaluation is needed,</del> the permittee shall submit <del>either the resultant information</del> <b>updated area of review and corrective action plan</b> in an electronic format to the Director for review and approval of the AoR results, <del>or a demonstration that no update is needed.</del>  | The language in the draft permit is awkwardly worded and the reference to “resultant information” is potentially open-ended. The regulation requires the permittee to submit either an amended plan or a demonstration that amendment is unnecessary.  |
| I(2)      | <b>2. Casing and Cementing</b> – Casing and cement or other materials used in the construction of the well must have sufficient structural strength for the life of the geologic sequestration project. All well materials must be compatible with all fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must prevent the movement of fluids into or between USDWs for the expected life of the well in accordance with 40 CFR 146.86. The casing and cement used in the construction of this well are shown in Attachment G of this permit and in the administrative record for this permit. Any change must be submitted in an electronic format for approval by the Director before installation. |  | <b>2. Casing and Cementing</b> – <del>The permittee has demonstrated to the satisfaction of the Director that the casing and cement</del> <del>or</del> <del>and</del> other materials <del>to be</del> used in the construction of the well must have sufficient structural strength for the life of the geologic sequestration project, <del>. All well materials must be</del> <del>are</del> compatible with all fluids with which the materials may be expected to come into contact, and <del>must</del> meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director, <del>. The casing and cementing program must prevent the movement of fluids into or between USDWs for the expected life of the well</del> in accordance with 40 CFR 146.86. The casing and cement used in the construction of this well are shown in Attachment G of this permit and in the administrative record for this permit. Any change must be submitted in an electronic format for approval by the Director before installation. | Once again, this condition is written in a way that suggests that compliance requires something beyond following the approved construction plan. That is not the case. It is sufficient for the permittee to follow the construction plan submitted with the permit application and approved in the permit.        |
| I(3)      | <b>3. Tubing and Packer Specifications</b> – Tubing and packer materials used in the construction of the well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The permittee shall inject only through tubing with a packer set within the long string casing at a point within or below the confining zone  |  | <b>3. Tubing and Packer Specifications</b> – <del>Tubing and packer materials used in the construction of the well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.</del> The permittee shall inject only through tubing with a packer set within the long string casing <del>at a point within or below the confining zone</del> <del>immediately above the injection zone.</del> <del>The tubing</del>  | Once again, this condition is written in a way that suggests that compliance requires something beyond following the approved engineering drawings, which is not the case. It is sufficient for the permittee to follow the engineering drawings submitted with the permit application and approved in the permit. |

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|           | immediately above the injection zone. The tubing and packer used in the well are represented in engineering drawings contained in Attachment G of this permit. Any change must be submitted in an electronic format for approval by the Director before installation.   |   | <del>and packer used in the well are</del> as represented in engineering drawings contained in Attachment G of this permit. Any change must be submitted in an electronic format for approval by the Director before installation.  |  |
| J(1)(d)   | (d) Tests to provide information about the injection and confining zones, including calculated fracture pressure and the physical and chemical characteristics of the injection and confining zones and the formation fluids in the injection zone that meet the requirements of 40 CFR 146.87(d); and  | 146.87(d) At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):<br>(1) Fracture pressure;<br>(2) Other physical and chemical characteristics of the injection and confining zone(s); and<br>(3) Physical and chemical characteristics of the formation fluids in the injection zone(s).   | (d) Tests <b>as necessary</b> to provide information about the injection and confining zones, <del>including to allow determination or calculation</del> of fracture pressure and the physical and chemical characteristics of the injection and confining zones and the formation fluids in the injection zone that meet the requirements of 40 CFR 146.87(d); and   | The applicable provision here is to make a determination or calculation. It may not be necessary to conduct any additional testing if the information already available is sufficient to support the determination or calculation.   |
| K(1)      | <b>1. Injection Pressure Limitation</b> – Except during stimulation, the permittee must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case shall injection pressure initiate fractures or propagate existing fractures in the confining zone or cause the movement of injection or formation fluids into a USDW. The maximum injection pressure limit is listed in Attachment A. | Attachment A states:<br><br>The maximum injection pressure, which serves to prevent confining-formation fracturing, was determined using the following formula/methodology:<br><br><ul style="list-style-type: none"> <li>For maximum injection pressure using a downhole pressure gauge, the maximum pressure is calculated as follows: 90% of fracture pressure of the injection zone. Therefore, the maximum injection pressure using downhole pressure gauge is 2,252 psia or <math>2,252 - 14.7 = 2,237</math> psig.</li> <li>For surface maximum wellhead injection pressure, this limitation was calculated using the following formula: <math>[(90\% \text{ of fracture gradient} - (0.433 \text{ psi/ft})(\text{specific gravity})) \times \text{upper depth of perforated interval}] - \text{atmospheric pressure}</math>. The maximum wellhead injection pressure is: <math>[(0.585 - (0.433)(0.64)) \times 3850] - 14.7 = 1,171</math> psig.</li> </ul> | <b>1. Injection Pressure Limitation</b> – Except during stimulation, the permittee must ensure that injection pressure does not exceed <del>90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case shall injection pressure initiate fractures or propagate existing fractures in the confining zone or cause the movement of injection or formation fluids into a USDW.</del> the maximum injection pressure limit <del>is</del> listed in Attachment A. | The applicable requirement is to comply with the maximum pressure limitation in the permit. The rest of what is specified in this condition has already been accomplished as a basis for setting that limit.   |
| K(8)      | <b>8. Circumstances Under Which Injection Must Cease</b> – Injection shall cease when any of the following circumstances arises:<br>(a) Failure of the well to pass a mechanical integrity test;<br>(b) A loss of mechanical integrity during   | 146.88(f) If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be  | <b>8. Circumstances Under Which Injection Must Cease</b> – Injection shall cease when any of the following circumstances arises:<br>(a) Failure of the well to pass a mechanical integrity test;<br>(b) A <b>confirmed</b> loss of mechanical integrity   | The permit condition is not consistent with the regulatory requirement, and the requirement to cease injection when there is “a significant unexpected change in the annulus or injection pressure” is very ambiguous and potentially troublesome. The recommendations for revised |

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|           | operation;<br>(c) The automatic alarm or automatic shut-off system is triggered;<br>(d) A significant unexpected change in the annulus or injection pressure;<br>(e) The Director determines that the well lacks mechanical integrity; or<br>(f) The permittee is unable to maintain compliance with any permit condition or regulatory requirement and the Director determines that injection should cease.  | lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:<br>(1) Immediately cease injection;<br>(2) Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;<br>(3) Notify the Director within 24 hours;<br>(4) Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and<br>(5) Notify the Director when injection can be expected to resume.<br><br>146.94(b) If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:<br>(1) Immediately cease injection;<br>(2) Take all steps reasonably necessary to identify and characterize any release;<br>(3) Notify the Director within 24 hours; and<br>(4) Implement the emergency and remedial response plan approved by the Director. | during operation;<br>(c) <del>If, upon investigation, the well appears to be lacking mechanical integrity after</del> (1) the automatic alarm or automatic shut-off system is triggered or ;<br>( <del>d</del> 2) A significant unexpected change in the annulus or injection pressure;<br>( <del>e</del> d) The Director determines that the well lacks mechanical integrity; or<br>( <del>f</del> e) The permittee is unable to maintain compliance with any permit condition or regulatory requirement and the Director determines that injection should cease.   | language will modify the permit conditions to be consistent with the applicable regulatory provisions which trigger investigations rather than automatic shutdowns. Cessation of injection must occur only when there is a reason to believe that a loss of mechanical integrity may have occurred. The “significant unexpected change” language remains ambiguous, and there should be some better understanding of how large these unexpected changes should be. For example, any change in annular pressure should be larger by more than double the magnitude of normal diurnal and temperature related fluctuations. The significance levels for these triggers should be established by written agreement once operating experience provides a basis for doing that. |
| M(1)(a)   | (a) The permittee shall maintain and comply with the approved Testing and Monitoring Plan (Attachment C of this permit) and with the requirements at 40 CFR 144.51(j), 146.88(e), and 146.90. The Testing and Monitoring Plan is an enforceable condition of this permit. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Procedures for all testing and monitoring under this permit must be submitted to the Director in an electronic format for approval at least 30 days prior to the test. In performing all testing and monitoring under this permit, the permittee must follow the procedures approved by the Director. If the permittee is unable to follow the EPA approved |   | (a) The permittee shall maintain and comply with the approved Testing and Monitoring Plan (Attachment C of this permit) <del>and with</del> to meet the requirements at 40 CFR 144.51(j), 146.88(e), and 146.90. The Testing and Monitoring Plan is an enforceable condition of this permit. <del>Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Procedures for all testing and monitoring under this permit must be submitted to the Director in an electronic format for approval at least 30 days prior to the test. In performing all testing and monitoring under this permit, the permittee must follow the procedures approved by the Director. If the permittee is unable to follow the EPA approved procedures, then, the permittee must contact the Director at</del> | The procedures are all spelled out in the plan.  |

| Provision | Text of Draft Permit   | References | Proposed Revision   | Comment  |
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|           | procedures, then, the permittee must contact the Director at least 30 days prior to testing to discuss options, if any are feasible. When the test report is submitted, a full explanation must be provided as to why any approved procedures were not followed. If the approved procedures were not followed, EPA may take an appropriate action, including but not limited to, requiring the permittee to re-run the test. |            | <p><del>least 30 days prior to testing to discuss options, if any are feasible. When the test report is submitted, a full explanation must be provided as to why any approved procedures were not followed. If the approved procedures were not followed, EPA may take an appropriate action, including but not limited to, requiring the permittee to re-run the test.</del></p> <p>--OR--</p> <p>The permittee has submitted the approved Testing and Monitoring Plan, which is included in Attachment C of this permit. This plan includes the information required by Sections 144.51(j), 146.88(e), and 146.90 and demonstrates how each of the applicable requirements will be met. The Testing and Monitoring Plan is an enforceable condition of this permit.</p> |  |
| M(2)      | <b>2. Carbon Dioxide Stream Analysis</b> – The permittee shall analyze the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics, as described in the Testing and Monitoring Plan and to meet the requirements of 40 CFR 146.90(a).  |            | <b>2. Carbon Dioxide Stream Analysis</b> – The permittee shall analyze the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics, as described in the Testing and Monitoring Plan <del>and</del> to meet the requirements of 40 CFR 146.90(a).  | By issuing the permit, EPA has determined that implementing the Testing and Monitoring Plan does meet the requirements of 40 CFR 146.90(a).  |
| M(3)      | <b>3. Continuous Monitoring</b> – The permittee shall maintain continuous monitoring devices and use them to monitor injection pressure, flow rate, volume, the pressure on the annulus between the tubing and the long string of casing, annulus fluid level, and temperature. This monitoring shall be performed as described in the Testing and Monitoring Plan to meet the requirements of 40 CFR 146.90(b).             |            |   | This is excellent because it properly recognizes that performing in accordance with the Testing and Monitoring Plan meets the requirements of 40 CFR 146.90(b).                    |
| M(4)      | <b>4. Corrosion Monitoring</b> – The permittee shall perform corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion on a quarterly basis using the procedures described in the Testing and Monitoring Plan and in accordance with 40 CFR 146.90(c) to ensure that the well components meet the minimum standards for material strength and                  |            | <b>4. Corrosion Monitoring</b> – The permittee shall perform corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion on a quarterly basis using the procedures described in the Testing and Monitoring Plan <del>and in accordance with 40 CFR 146.90(e)</del> to ensure that the well components meet the minimum standards for material strength and performance set forth in 40  | Once again, this condition is written in a way that suggests that compliance requires something beyond following the approved corrosion monitoring process, which is not the case. |

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|              | performance set forth in 40 CFR 146.86(b).  |  | CFR 146.86(b).  |   |
| M(5) and (6) | <p><b>5. Ground Water Quality Monitoring</b>– The permittee shall monitor ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones. This monitoring shall be performed for the parameters identified in the Testing and Monitoring Plan at the locations and depths, and at frequencies described in the Testing and Monitoring Plan to meet the requirements of 40 CFR 146.90(d).</p> <p><b>6. External Mechanical Integrity Testing</b> – The permittee shall demonstrate external mechanical integrity as described in the Testing and Monitoring Plan and Section L of this permit to meet the requirements of 40 CFR 146.90(e).</p> |  |   | The language in these conditions succeeds better than other formulations in indicating that compliance with the Testing and Monitoring Plan will “meet the requirements” of the respective regulatory provisions. The approach reflected in the Class IH permit provisions used by EPA Region 5 is still preferable to this formulation, but this approach is acceptable. |
| M(8)         | <p>(a) The permittee shall use direct methods to track the position of the carbon dioxide plume and the pressure front in the injection zone as described in the Testing and Monitoring Plan and to meet the requirements of 40 CFR 146.90(g)(1).</p> <p>(b) The permittee shall use indirect methods to track the position of the carbon dioxide plume and pressure front as described in the Testing and Monitoring Plan and to meet the requirements of 40 CFR 146.90(g)(2).</p>   |  | <p>(a) The permittee shall use direct methods to track the position of the carbon dioxide plume and the pressure front in the injection zone as described in the Testing and Monitoring Plan <del>and</del> to meet the requirements of 40 CFR 146.90(g)(1).</p> <p>(b) The permittee shall use indirect methods to track the position of the carbon dioxide plume and pressure front as described in the Testing and Monitoring Plan <del>and</del> to meet the requirements of 40 CFR 146.90(g)(2).</p> | By issuing the permit, EPA has determined that implementing the Testing and Monitoring Plan does meet the applicable requirements.  |
| O(1)         | <b>1. Well Plugging Plan</b> – The permittee shall maintain and comply with the approved Well Plugging Plan (Attachment D of this permit) which is an enforceable condition of this permit and shall meet the requirements of 40 CFR 146.92.  |  | <b>1. Well Plugging Plan</b> – The permittee shall maintain and comply with the approved Well Plugging Plan (Attachment D of this permit) which is an enforceable condition of this permit and <del>shall</del> <ins>meets</ins> the requirements of 40 CFR 146.92.   | By issuing the permit, EPA has determined that implementing the Well Plugging Plan does meet the applicable requirements.   |
| O(6)(b)      | (b) The permittee shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered, as specified in the Post-Injection Site Care and Site Closure Plan and in 40 CFR 146.90, and 40 CFR 146.93, including:   |  | (b) The permittee shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered, as specified in the Post-Injection Site Care and Site Closure Plan <del>and in 40 CFR 146.90, and 40 CFR 146.93</del> , including:   | By issuing the permit, EPA has determined that implementing the Post-Injection Site Care and Site Closure Plan does meet the applicable requirements.   |
| O(6)(b)(v)   | (v) The permittee shall continue to conduct   | 146.93(b) (2) If the owner or operator can | (v) The permittee shall continue to conduct post-   | There are a number of different scenarios that  |

| Provision | Text of Draft Permit  | References  | Proposed Revision  | Comment   |
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|           | post-injection site monitoring for at least 50 years or for the duration of any alternative timeframe approved pursuant to 40 CFR 146.93(c) and the Post-Injection Site Care and Site Closure Plan.   | demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs. | injection site monitoring <del>until the Director has authorized site closure. for at least 50 years or for the duration of any alternative timeframe approved pursuant to 40 CFR 146.93(c) and the Post-Injection Site Care and Site Closure Plan.</del>  | would allow the permittee to cease post-injection monitoring before 50 years, but all involve obtaining authorization for site closure. Therefore, this wording is sufficient to cover all of those contingencies.                            |
| O(6)(d)   | (d) Prior to authorization for site closure, the permittee shall submit to the Director for review and approval, in an electronic format, a demonstration, based on information collected pursuant to Section O(5)(b) of this permit, that the carbon dioxide plume and the associated pressure front do not pose an endangerment to USDWs and that no additional monitoring is needed to ensure that the project does not pose an endangerment to USDWs, as required under 40 CFR 146.93(b)(3). The Director reserves the right to amend the post-injection site monitoring requirements (including extend the monitoring period) if the carbon dioxide plume and the associated pressure front have not stabilized or there is a concern that USDWs are being endangered. | 146.93(b) (3) Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.   | (d) Prior to authorization for site closure, the permittee shall submit to the Director for review and approval, in an electronic format, a demonstration, based on information collected pursuant to Section O(5)(b) of this permit, that the carbon dioxide plume and the associated pressure front do not pose an endangerment to USDWs and that no additional monitoring is needed to ensure that the project does not pose an endangerment to USDWs, as required under 40 CFR 146.93(b)(3). The Director reserves the right to amend the post-injection site monitoring requirements (including extend the monitoring period) if <del>the carbon dioxide plume and the associated pressure front have not stabilized or</del> there is a concern that USDWs are being endangered. | There is no requirement for the carbon dioxide plume and the associated pressure front to “stabilize”, whatever that means. Indeed, the word stabilize does not appear in any form in the final Class VI regulations and is unnecessary here. |
| O(6)(f)   | (f) After the Director has authorized site closure, the permittee shall plug all monitoring wells as specified in Attachment E of this permit – the Post-Injection Site Care and Site Closure Plan – in a manner which will not allow movement of injection or formation fluids that endangers a USDW. The permittee shall also restore the site to its pre-injection condition.  |   | (f) After the Director has authorized site closure, the permittee shall plug all monitoring wells as specified in Attachment E of this permit – the Post-Injection Site Care and Site Closure Plan – in a manner which will not allow movement of injection or formation fluids that endangers a USDW. <del>The permittee shall also restore the site to its pre-injection condition.</del>  | The UIC regulations do not include a requirement for site restoration.  |
| P(1)      | 1. The Emergency and Remedial Response Plan describes actions the permittee must take to address movement of the injection or formation fluids that may cause an  |   | 1. The Emergency and Remedial Response Plan describes actions the permittee must take to address movement of the injection or formation fluids that may cause an endangerment to a   | Once again, this condition is written in a way that suggests that compliance requires something beyond following the approved Emergency and Remedial Response Plan, which is not the case.  |

| Provision | Text of Draft Permit   | References | Proposed Revision   | Comment   |
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|           | endangerment to a USDW during construction, operation, and post-injection site care periods. The permittee shall maintain and comply with the approved Emergency and Remedial Response Plan (Attachment F of this permit), which is an enforceable condition of this permit, and with 40 CFR 146.94. |            | USDW during construction, operation, and post-injection site care periods. The permittee shall maintain and comply with the approved Emergency and Remedial Response Plan (Attachment F of this permit), which is an enforceable condition of this permit; <del>and with 40 CFR 146.94.</del> | The revision recommended here should be adopted and incorporated in the final permit. |

## Greenhagen, Andrew

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**From:** ADMComments  
**Sent:** Thursday, June 19, 2014 1:27 PM  
**To:** Greenhagen, Andrew  
**Subject:** FW: (030232309) ADM Carbon Sequestration Public Comments

-----Original Message-----

From: idaemon@unixmail.rtpnc.epa.gov [mailto:idaemon@rtpnc.epa.gov]  
Sent: Friday, May 30, 2014 10:23 PM  
To: ADMComments  
Subject: (030232309) ADM Carbon Sequestration Public Comments

2-Name  
Jeffrey Sprague  
3-Organization

4-E-mail

Ex. 6 [REDACTED]

5-Street

Ex. 6 [REDACTED]

6-City

Ex. 6 [REDACTED]

7-State

IL

8-Zipcode

Ex. 6 [REDACTED]

9-Comments

Please type your comments here

Mr. Batka:

The following series of comments are intended to modify and supplement an initial comment I submitted on May 6, 2014 on the Archer Daniels Midland Company (ADM) Draft Permit for the proposed CCS #2 Well in Macon County, Illinois. That initial comment requested a "45 day extension of the comment period to allow USEPA time to make available the full administrative record of the proposed permitting action and to give the local citizenry the necessary time and opportunity to review and respond to that record". In the interest of making the administrative record readily available to the public, it was requested that the record be made available at the Decatur Public Library (Decatur, IL), the designated repository for the draft permit and accompanying fact sheet. I wish to modify my comment period extension request from 45 days to 120 days. This is for the following reasons: 1.) The response received from USEPA to a Freedom of Information Act (FOIA) request (dated April 29, 201

4) I made for a complete copy of the administrative record strongly indicated that providing the complete record could take more than 30 days. Clearly, such a slow response would not allow adequate time for review of the documents by the close of the comment period (May 30, 2014). Despite my efforts to get a response from USEPA (e-mail to Allan Batka dated May 10, 2014) regarding the cost and contents of the "CD's containing electronic files" (e-mail from Allan Batka dated May 7, 2014), and thereby facilitate the receipt of at least some information, my communication did not receive a response, giving the appearance of USEPA just ignoring the request. 2.) Though the full administrative record is available for viewing at USEPA's offices in Chicago, a one-way travel distance of approximately 170 miles from the Decatur area to Chicago, represents an unreasonable travel burden. 3.) The time needed to familiarize oneself with the ECLIPSE 300 reservoir simulator model and then to evaluate USEPA's model inputs and to conduct independent simulations auditing USEPA's results will take at least several months.

The following additional comments are offered in response to information in the draft permit and on the USEPA Region 5 website ([www.epa.gov/Region5/water/uic/adm](http://www.epa.gov/Region5/water/uic/adm)):

1.) The geographical depiction provided by USEPA of the extent of the subsurface CO2 plume and pressure front (see Fact Sheet) indicates that over time the plume will extend to areas for which ADM does not have surface land ownership rights. USEPA has not addressed in the draft permit the fundamental legal question of whether ADM has the mineral rights ("pore rights") that would allow them to conduct subsurface injection when the CO2 plume and pressure front extends to areas directly below the ground surface where ADM doesn't have surface land ownership. In the absence of mineral rights, a permit cannot be issued.

2.) No air quality impact analysis was provided evaluating criteria pollutant (NOx, PM2.5, PM10, SO2, CO, and Ozone) and toxic air contaminant emissions associated with wellsite equipment usage and increased vehicular traffic associated with well construction, well completion, and CO2 injection activities. Such an analysis must include dispersion modeling (photochemical modeling for ozone) results for both ambient air concentrations and depositional loading with regard to the National Ambient Air Quality Standards, impacts to threatened and endangered species, soil acidification, and additional cancer and non-cancer human health risk.

3.) The ECLIPSE 300 (v2011.2) reservoir simulator model with CO2STORE module is proprietary software available to the public only at considerable cost. It is unreasonable to expect the general public to incur such cost in order to evaluate model assumptions, model implementation, and modeling results generated by USEPA. Moreover, USEPA has not made available the raw inputs and output for public review and comment. USEPA should make available a temporary license for the software, as well as all model input files, in order to provide opportunity for conducting model simulations for evaluating reservoir behavior and plume development.

4.) The need for a more thorough understanding of the lithologic properties and lithofacies characteristics of the Mt. Simon reservoir, for improved predictive capabilities regarding CO2 plume development and migration, necessitates the acquisition of a complete cored sequence through the injection zone and stratigraphically higher (or lower) intervals into which plume migration is anticipated. Only from the direct analysis of intact injection zone rock can the public have high confidence of USEPA's modeling results and expected plume behavior. The permit should contain a requirement for recovery of a complete section of continuous core for the CO2 injection zone and adjacent intervals.

Thank you for your consideration of these comments.

Jeffrey Sprague

Ex. 6 [REDACTED]  
[REDACTED], Illinois [REDACTED]

UserWord

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Word

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Send Comments

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